

Descriptions — Genetics

of

Courses

999. Doctoral Dissertation Research
Fall, Winter, Spring, Summer. 3 to 12 credits. Majors.
Research for the doctoral dissertation in genetics.

GEOGRAPHY

GEO

College of Social Science

100. People, Location and Environment (S)
Fall, Winter, Spring, 4(4-0) Not open to Geography majors.
Relationships between people and environments, their spatial consequences and resulting regional structures across the earth's surface.

122. The World of Maps
Fall, Winter, Spring, 3(3-0)
Discussion of types, practical applications, and sources of maps. Map reading skills.

150. Geography of Selected Current Problems
Fall, Winter, Spring, 2(2-0)
The geographic perspective is used to examine U.S. and world problems of major concern such as international conflicts, environment quality, spatial change, and economic development.

170. Future Worlds (S)
Fall, Spring, Summer, 3(3-0)
Geographical approach to environmental, biological, economic, social and political problems facing mankind between now and year 2000.

201. Geography of Culture
Fall, Winter, Spring, 3(3-0)
A systematic discussion of cultural geography, stressing cultural processes and relationships.

203. Resource Ecology
(IDC 200.) Fall, Winter, Spring, Summer, 3(3-0) Interdepartmental with the departments of Fisheries and Wildlife, Forestry, Resource Development, and Zoology. Administered by the Department of Fisheries and Wildlife.
Basic concepts of ecology which are the unifying basis for resource management, conservation policy and the analysis of environmental quality. Extensive use of guest lecturers.

204. World Regional Geography (S)
Fall, Winter, Spring, Summer, 4(4-0)
Human relationships with natural and cultural environments.

206. Physical Geography
Fall, Winter, Spring, Summer, 4(4-0)
Analysis of weather, climate, landforms, soils, water and biotic factors of the human environment, including its spatial, genetic, and functional interrelationships.

206L. Physical Geography Laboratory
Fall, Winter, Spring, 1(0-2) GEO 206 or concurrently.
Laboratory study of geographic aspects of map interpretation, aerial photographs, weather, climate, soils, landforms, and vegetation.

213. World Economic Geography
Fall, Winter, Spring, Summer, 4(4-0)
Emphasis on distribution of natural resources, industries and service activities, stressing factors of location and economic concepts of locational change.

223. Introduction to Cartography
Fall, Spring, 4(2-4)
Principles and techniques of constructing maps. Mapping methods and mapping decisions emphasized.

224. Remote Sensing: Airphoto Interpretation
Fall, Winter, Spring, 4(2-4) Sophomores.
Use of aerial photographs in the identification and interpretation of physical and cultural features of the terrestrial environment. Includes principles of photogrammetry, and stresses application and practice.

IDC. Introduction to Contemporary China
For course description, see Interdisciplinary Courses.

IDC. Contemporary Japan
For course description, see Interdisciplinary Courses.

300. North America
Fall, Winter, Spring, 3(3-0)
Human and physical geography of North America, north of the Mexican border.

307. Geography of Environmental Quality
Spring, 3(3-0) Sophomores or approval of department.
Identification of the physical, cultural and psychological factors which constitute human environments, and how they vary and may be modified or controlled.

309. Geography of Recreation
Winter, 3(3-0)
Natural and cultural factors influencing the use of space for recreation. Emphasis on recreation land use in the United States and current problems and conflicts.

310. Historical Geography of the United States
Spring, 3(3-0)
Reconstruction of geographies of the United States as they existed in the past.

315. South America
Spring, 3(3-0) Sophomores or approval of department.
Regional geography of South America with special attention to contemporary geographic problems.

316. Middle America
Winter, 3(3-0) Sophomores or approval of department.
Interpretation of physical and cultural environment of Mexico, Central America, and the West Indies. Special attention to contemporary geographic problems.

318. Cities of the World
Fall, Winter, Spring, 3(3-0)
A cross-cultural examination of cities, their historic growth, regional functions, and internal dynamics.

320. Geography of Population
Fall, 3(3-0)
Relationship of the size, composition, and distribution of population to geographic variations in the nature of places.

321. Africa
Fall, 3(3-0) Sophomores or approval of department.
Emphasis on continent south of Sahara: environments, peoples, problems, and potentials.

322. Africa: Contemporary Problems
Spring, 3(3-0) Sophomores or approval of department. GEO 321 recommended.
Major development problems examined from environmental, historical, economic, and social perspectives.

340. Western Europe
Winter, 3(3-0) Sophomores or approval of department.
Geographic analysis of physical and human character and resources of Western Europe (Scandinavia, British Isles, Benelux, Germany, France and Switzerland). Emphasis on major problems.

IDC. Contemporary South Asia
For course description, see Interdisciplinary Courses.

342. Eastern and Southern Europe
Spring, 3(3-0) Sophomores or approval of department.
A geographical analysis of countries of Eastern and Southern Europe with emphasis on economic, political, social and ethnic problems.

351. Weather and Climate
Fall, 3(3-0)
Non-mathematical treatment of general weather processes and patterns, including surface and middle atmospheric (jet stream) features, with emphasis on the U.S.

360. The Soviet Union
Fall, 3(3-0) Sophomores or approval of department.
A geographical analysis of the Soviet Union and its inhabitants with emphasis on economic, social, political and ethnic problems.

365. China
Winter, 3(3-0)
The physical and human geography of China and their relationship to the development problems of the country, with emphasis on the post-1949 period.

400H. Honors Work
Fall, Winter, Spring, 1 to 16 credits.
Approval of department.

401. The Ghetto
(UMS 401.) Fall, Spring, 4(4-0) Juniors or approval of department.
Analysis of the ghetto including its spatial organization, structure and distribution of nonwhite and ethnic populations in cities with emphasis on the United States.

402. The Geography of the City
Spring, 3(3-0)
Spatial theories, concepts, and designs of internal urban economic, social, and political structures.

- 403. The American City and Its Region**
Winter. 3(3-0)
The regional system of cities in terms of size, spacing, and functional relationships.
- 407. Michigan**
Fall, Spring. 3(3-0) *Sophomores or approval of department.*
Selected aspects of the physical and cultural geography of Michigan.
- 408. Canada**
Spring. 3(3-0) *Sophomores or approval of department.*
An analysis of the physical, economic and cultural patterns of Canada.
- 409. Geography of Transportation**
Fall. 3(3-0)
Analysis of spatial principles of transportation, including theories of interaction, network structures, and the role of transport in space-economy.
- 411. Problems in Geography**
Fall, Winter, Spring, Summer. 1 to 6 credits. *Approval of department.*
Research on specialized geographic problems.
- 415. Field Techniques**
Fall. 4(1-7) *May reenroll for a maximum of 8 credits. Approval of department.*
Basic methods for making physical and cultural observations and measurements including map reading, photo interpretation, field sketch mapping, compass traverses, sampling, questionnaire design, interviewing, analysis and reporting. Requires work off campus.
- 418. Critical Issues in Contemporary Africa**
Fall, Spring. 3(3-0) *May reenroll for a maximum of 9 credits if different topics are taken. One course on African subject and approval of instructor. Interdepartmental with African Languages and the departments of Anthropology, History, Political Science, and Sociology. Administered by the Department of History.*
Four separate multidisciplinary topics will be offered at different times: The Horn of Africa, Southern Africa, Africa and the Americas, Social Impact Studies.
- 424. Advanced Remote Sensing Techniques**
Spring. 4(2-4) GEO 224.
Extraction, analysis, and interpretation of information obtained from remote sensors including conventional, infrared and radar imagery. Introduction to stereo-plotting devices, stressing theories of remote sensing and applications.
- 425. Development of Geographic Thought**
Spring. 3(3-0) *Approval of department.*
Evolution of geographic thought from antiquity to the present emphasizing developments in 20th century America. Survey of the theory and methodology of contemporary geography.
- 426. Advanced Cartography**
Spring. 4(1-6) GEO 223.
Development of advanced skills in construction of maps, including ink drafting, lettering systems, map projections, scribing and photo reproduction.
Approved through Winter 1985.
- 427. Quantitative Methods in Geography**
Fall. 4(4-0) *Approval of department.*
Basic quantitative techniques used in the analysis and classification of geographic data.
- 428. Computer Mapping in Geography**
Spring. 4(4-0) CPS 120.
The preparation of computer maps and the application of the computer to the development and testing of models in geography.
- 429. Landforms of North America**
Winter, Spring. 3(3-0) *May reenroll for a maximum of 6 credits. GEO 206, GLG 201 or approval of department.*
Study of the surface features of eastern U.S.A. (winter term) and western U.S.A. (spring term).
- 430. Climates of the World**
Spring. 3(3-0) GEO 206 or approval of department.
Regional analysis of the world's weather and climate.
- 431. Landform Analysis**
Fall. 3(3-0) GEO 206, GLG 201 or approval of department.
A problem approach is utilized to explain classical and contemporary interpretations of the nature of selected landforms, including treatment of related tools and techniques. Option for some field study.
- 432. Biogeography**
Spring. 3(3-0) GEO 206 or approval of department.
Patterns of vegetation, with emphasis on forests of eastern North America. Option for some field study.
- 435. Land Use and Location Theory**
Spring. 3(3-0) GEO 213 or approval of department.
Location principles and theories of economic activities, including methods of regional analysis.
- 436. Microclimatology**
Winter. 3(3-0) MTH 108; GEO 351 recommended. *Interdepartmental with and administered by Agricultural Engineering Technology.*
Physical environment in the lower few hundred meters of the atmosphere and within the biosphere.
- 440. Spatial Aspects of Regional Development**
Spring. 3(3-0) GEO 213 or one 300 level regional geography course or approval of department.
Spatial and environmental factors in regional development at national and international scales.
- 446. Production Cartography**
Winter. 4(2-4) GEO 223 or approval of department.
Technical aspects of map and graphics production. Sequencing of procedures. Theoretical and applied aspects of process photography, typography, and proofing.
- 447. Advanced Cartography**
Fall. 4(2-4) GEO 223.
Advanced concepts in mapmaking including statistical surfaces portrayal, quantitative data analysis, classing techniques, and nominal mapping.
- 451. Climatic Patterns and Atmospheric Circulation**
Winter. 3(3-0) GEO 206 or approval of department.
Relationship between weather, climate, and upper air flow, with emphasis on this climatology of North America.
- 456. Map Design**
Spring. 4(2-4) GEO 446.
Technical and theoretical aspects of designing maps. Topics include color, lettering, content, layout, and the influence of the user.
- 458. Geography for Teachers**
Winter. 3(3-0)
Problems and practices of teaching geography in elementary and secondary schools.
- 466. Social and Spatial Approaches to Community Service**
Spring. 3(3-0) GEO 201 or S W 205 or approval of department. *Interdepartmental with and administered by the School of Social Work.*
Analysis of major themes in social service planning: communities and neighborhoods, public policy administration, social service networks, location of public facilities, evaluation and accountability of service systems.
- 470. Geography of Health and Disease**
Fall, Winter. 3(3-0)
Spatio-environmental concepts and the techniques applied to health problems: disease transmission cycles, community nutrition and health-care planning.
- 805. Seminar in Urban Geography**
Spring. 3(3-0) *Approval of department.*
Selected research topics on the geography of the city.
- 808. Environmental Measurements**
(A E 805, AET 805.) Spring. 4(3-3) *Approval of department. Interdepartmental with and administered by Agricultural Engineering Technology.*
Methods and techniques for accurate measurement and interpretation of environmental parameters. Temperature, humidity, wind and air flow characteristics, radiation, light intensity, gaseous and particulate concentrations in atmospheric microclimates will be discussed.
- 809. Seminar in Transportation Geography**
Winter. 3(3-0) *Approval of department, GEO 409.*
Selected research topics.
- 811. Advanced Quantitative Methods in Geography and Planning**
Spring. 4(4-0) *Approval of department, GEO 427. Interdepartmental with Urban Planning.*
Statistical and mathematical approaches to spatial distributions and areal data.
- 812. Regional Seminar**
Fall, Winter, Spring, Summer. 1 to 3 credits. *May reenroll for a maximum of 9 credits. Approval of department.*
Selected research topics in regional geography.

**Descriptions — Geography
of
Courses**

814. Research Methods in Urban and Regional Analysis
Winter. 3(3-0) U P 427 or approval of department. Interdepartmental with and administered by Urban Planning.

Basic quantitative techniques used in urban and regional analysis and planning, including statistical, linear, and network methods. Introduction to computer use.

815. Application of Research Methods to Planning and Analysis

Spring. 3(3-0) U P 814. Interdepartmental with and administered by Urban Planning.

Applied techniques used in planning research. Analysis and forecasting of urban population, economic activity, and land use. Analysis of transportation and other community facilities.

818. Readings in Geography

Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 15 credits. Approval of department.

819. Theories of Urban Forms and Structure

Spring. 3(3-0) Approval of department. Interdepartmental with and administered by Urban Planning.

Idealized urban forms, theories and models in urban form as it relates to function and location of urban activities.

825. History and Philosophy of Geography

Fall. 3(3-0) Approval of department. Analysis of the monographic and serial literature dealing with the theory and evolution of geographic science.

826. Research Design in Geography

Winter, Spring. 3(3-0) Approval of department.

Formalized approach to research and writing in geography: Identification of geographic problems and their relative importance, structuring and stating hypotheses, data acquisitions, and tests for validity.

828. Seminar in Recreation Geography

Spring. 3(3-0) GEO 309 or approval of instructor.

Selected current problems in recreation geography in the U.S. and abroad.

834. Seminar in Physical Geography

Winter, Spring. 3(3-0) May reenroll for a maximum of 9 credits. Approval of department.

Analysis of classical and contemporary problems in physical geography treated as follows: climatology (winter), biogeography (spring), geomorphology (spring).

835. Seminar in Location Theory

Fall. 3(3-0) Approval of department, GEO 435.

Recent developments and research in location analysis and regional science.

839. African Research

(IDC 838.) Fall, Winter, Spring. 2 to 4 credits. May reenroll for a maximum of 8 credits. Graduate standing or approval of instructor. Interdepartmental with African Languages and the departments of Anthropology, Educational Administration, History, Political Science, and Sociology. Administered by the Department of Anthropology.

African-related archival and field research topics and methodologies viewed from perspective of relevant social science and humanistic disciplines associated with the African Studies Center.

845. Proseminar in Cartography

Winter. 3(3-0) Approval of department.

Contemporary cartographic research. Research questions and methods in cartography.

846. Seminar in Cartography

Spring. 3(3-0) May reenroll for a maximum of 12 credits. Approval of department.

Research projects in cartography.

850. Advanced Field Techniques

Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 8 credits.

Instruction and practical training in the selection, data-gathering, on-site analysis, and presentation of geographic field problems.

870. Seminar in Medical Geography

Winter. 3(3-0)

Spatio-environmental analysis of selected health problems.

899. Master's Thesis Research

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

901. Problems in Cultural Geography

Fall, Winter, Spring. 1 to 3 credits. May reenroll for a maximum of 6 credits. Approval of department.

Special research problems.

902. Problems in Physical Geography

Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 6 credits.

Supervised research in specific topics of physical geography.

906. Problems in Economic Geography

Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 6 credits. Approval of department.

Special research problems.

910. Problems in Historical Geography

Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 6 credits. Approval of department.

Special research problems in historical geography.

912. Independent Study in Regional Geography

Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 15 credits. Approval of department.

Individual studies in regional geography.

918. Problems in Geography

Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits. Approval of department.

Research on specific geographical problems.

934. Problems in Population

Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits. Approval of department.

Special research problems.

999. Doctoral Dissertation Research

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

GEOLOGICAL SCIENCES

(Name changed effective July 1, 1983. Formerly the Department of Geology.)

College of Natural Science

Geology

GLG

200. Geology of Human Environment (N)

Fall, Winter, Spring, Summer. 3(3-0) Not open to Geology majors. Credit will be given in only one of the following: GLG 200, GLG 201, GLG 306.

An exploration of social philosophical and political events which require a geological viewpoint for resolution. The application of geologic and social/historical information will also reinforce the concept of the scientific method.

200L. Laboratory—Geology of Our Environment

Fall, Winter, Spring, Summer. 1(0-3) GLG 200 or concurrently.

Laboratory study of geologic processes associated with environmental hazards. Emphasis placed on land-use planning, applying geologic criteria to evaluate land potentials.

201. Earth Processes

Fall, Winter, Spring. 4(4-2) Credit will be given for only one of the following: GLG 200, GLG 201, GLG 306.

Physical processes concerning evolution of Earth and its environments. Conservation and interaction of energy and matter through time. Laboratory stresses interpretation of process through studies of geologic data.

202. Evolution of the Earth

Fall, Winter, Spring. 4(4-2) GLG 200; or GLG 201; or GLG 306.

Integration of physical, chemical and biological processes from which our present environment has evolved; problems and controversies in the development of ideas of geologic and organic evolution.

205. Oceanology—The Marine Environment

Fall. 3(3-0)

Physical oceanography, including origin, hydrologic, chemical, geological properties; and environmental quality of the oceans. Human-sea interactions are emphasized including resource utilization and pollution.

282. Energy Resources of the Earth

Winter. 3(3-0)

World energy resources of petroleum, coal, and atomic fuel. Social, political, economic and environmental problems of fuels.